

Claims

- [c1] 1. A random number generator comprising:
 - a plurality of voltage islands;
 - one or more latches located on each of said plurality of voltage islands, said one or more latches adapted to capture the voltage value of the respective voltage island on which they are located as an input value of said one or more latches; and
 - a control circuit for randomly controlling the state of each of said plurality of voltage islands and for capturing an output value for each of said one or more latches.
- [c2] A random number generator according to claim 1, wherein said control circuit includes two or more clocks, each of said clocks having a logic value, a multiplexer for each of said plurality of voltage islands, each of said multiplexers adapted to receive each of said logic values, and an enable circuit for each of said plurality of voltage islands.
- [c3] A random number generator according to claim 2, wherein each of said two or more clocks is adapted to send said logic values to each of said multiplexers, each of said multiplexers is adapted to select a clock logic value and send said clock logic value to each of said voltage islands via said enable circuits, and said voltage islands is turned on or off depending on said clock logic value.
- [c4] A random number generator according to claim 2, wherein each of said two or more clocks is adapted to send said clock logic value to each of said multiplexers, each of said multiplexers is adapted to select a

particular clock logic value and send said particular clock logic value to each of said one or more latches at said voltage islands.

- [c5] A random number generator according to claim 4, wherein each of said one or more latches is adapted to take a voltage value reading of their respective voltage island and send a corresponding output value to a register when said clock logic value is received by each of said one or more latches.
- [c6] A random number generator according to claim 1, further comprising a conversion circuit for producing one or more binary numbers from said output value for each of said one or more latches, wherein said conversion circuit includes one or more registers for collecting latch output values and converting collected values to binary number strings.
- [c7] A random number generator according to claim 6, wherein said conversion circuit includes a register for storing binary numbers for later use by the random number generator.
- [c8] A system for generating random numbers comprising:
 - a voltage island module having a plurality of voltage islands, one or more latches located on each of said plurality of voltage islands, said one or more latches adapted to capture the voltage value of the respective voltage island on which they are located;
 - a control module adapted to randomly control the state of each of said plurality of voltage islands and capture an output value for each of said one or more latches;
 - a conversion module adapted to produce one or more binary numbers

from said output value for each of said one or more latches; and
a random number generator module adapted to receive each of said one
or more binary numbers as one or more seed numbers and generate
random numbers.

- [c9] A system for generating random numbers according to claim 8, wherein
said control module includes two or more clocks, each of said clocks
having a logic value, a multiplexer for each of said plurality of voltage
islands, each of said multiplexers adapted to receive each of said logic
values, and an enable circuit for each of said plurality of voltage islands.
- [c10] A system for generating random numbers according to claim 9, wherein
each of said two or more clocks is adapted to send said logic values to
each of said multiplexers, each of said multiplexers is adapted to select a
clock logic value and send said clock logic value to each of said voltage
islands via said enable circuits, and said voltage islands is turned on or
off depending on said clock logic value.
- [c11] A system for generating random numbers according to claim 9, wherein
each of said two or more clocks is adapted to send said clock logic value
to each of said multiplexers, each of said multiplexers is adapted to
select a particular clock logic value and send said particular clock logic
value to each of said one or more latches at said voltage islands.
- [c12] A system for generating random numbers according to claim 11, wherein
each of said one or more latches is adapted to take a voltage value
reading of their respective voltage island and send a corresponding
output value to a register when said clock logic value is received by each

of said one or more latches.

- [c13] A system for generating random numbers according to claim 8, wherein said conversion circuit includes a first register for collecting latch output values and converting collected values to a binary number and a second register for combining said binary numbers.
- [c14] A method of generating random numbers, comprising the steps of:
 - providing a plurality of voltage islands, each of said plurality of voltage islands having one or more latches;
 - randomly controlling the state of each of said plurality of voltage islands;
 - capturing the voltage value of each of said plurality of voltage islands via said one or more latches;
 - capturing an output value for each of said one or more latches; and
 - converting said output value for each of said one or more latches to one or more binary numbers.
- [c15] A method of generating random numbers according to claim 14, further comprising the steps of:
 - providing two or more clocks, each of said clocks having a logic value;
 - providing a multiplexer for each of said plurality of voltage islands, each of said multiplexers adapted to receive each of said logic values; and
 - an enable circuit for each of said plurality of voltage islands.
- [c16] A method of generating random numbers according to claim 15, further comprising the steps of:
 - sending each of said logic values to each of said multiplexers;
 - a particular logic value at each of said multiplexers;

said particular logic value to each of said plurality of voltage islands via said enable circuits;

on or turning off each of said plurality of voltage islands depending on said logic value sent by said multiplexer.

- [c17] A method of generating random numbers according to claim 15, further comprising the steps of:
 - sending said logic value to each of said multiplexers;
 - a particular logic value at each of said multiplexers; and
 - said particular logic value to each of said one or more latches at each of said plurality of voltage islands.
- [c18] A method of generating random numbers according to claim 17, further comprising the steps of:
 - capturing the voltage value of said voltage island at each of said one or more latches when said logic value is received by said one or more latches; and a corresponding output value is to a register.
- [c19] A method of generating random numbers according to claim 14, further comprising the steps of:
 - providing a conversion circuit including a first register and a second register;
 - collecting latch output values in said first register;
 - collected latch output values to a binary number; and
 - and storing said binary numbers in said second registerA method of generating random numbers according to claim 19, further comprising the steps of:

providing a third register; and
said binary numbers in said third register for later use by the random
number generator.

- [c20] A method of generating random numbers according to claim 19, further comprising the steps of:
 - providing a third register; and
 - storing said binary numbers in said third register for later use by the random number generator.